daisywriter®

INFORMATION MANUAL

Computers International Incorporated
Model 2000/1500 Daisywriter Printer

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INTERFERENCE POTENTIAL AND SIMPLE MEASURES TO CORRECT INTERFERENCE

This equipment generates and uses radio frequency energy and if not installed and used properly, that is in strict accordance with Daisywriter 2000/1500 installation instructions, may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.

Relocate the computer with respect to receiver.

Move the computer away from the receiver.

Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

If necessary, consult the dealer or an experienced radio/television technician for additional suggestions.

Further information for correcting interference can be obtained by sending for the the booklet titled "How to Identify and Resolve Radio/TV Interference Problems" prepared by the Federal Communications Commission. It is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

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CONFIGURATION SWITCHES   TOP DIPSWITCH

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The top dipswitch on the Daisywriter(TM) 2000/1500 provides for selection of the functions below:

Top Position T1-T8

Position	1	2	3	4	5	6	7	8
ON	PAPR CONT	SHT FDR	IRC	8LPI	---LANGUAGE-----			
OFF	PAPR CUT			6LPI	----SELECT------			

Position 1

CONTINUOUS / CUT SHEET SELECT

When switches T1 and T2 are OFF, the printer will recognize the end of one sheet, sound the alarm for 1 second and go off-line. To resume operation insert a new sheet of paper and position it to the mechanical top of form, then press READY/TEST to go on-line. Mechanical top of form is defined as the horizontal red line located on the paper guide. For the first five lines the paper bail will be lifted automatically to allow the cut sheet to pass through the roller guides. Print will resume for one sheet.

For continuous paper set switch T1 ON. The printer will allow continuous printing of the text without going off-line.

Position 2

SHEET FEEDER SELECT

T2 ON provides for a special program required when utilizing a sheet feeder. Contact your CII representative for further information regarding this option.

Position 3

INVERT REVERSE CHANNEL SELECT

This switch inverts the polarity of the reverse channel signal on pin 47 of the I/O connector. This signal normally goes negative when busy and is positive when not busy, so if IRC is ON (T3 ON) the polarity of signalling will be reversed. RSSCA+ is normally on pin 11 of the RS-232 I/O. Used with serial interface only. Switch is usually OFF.

****

Position 4

LINES PER INCH SELECT

8 lines per inch ON; 6 lines per inch OFF. Standard setting is 6 lines per inch.

Position 5-8

LANGUAGE SELECT

Positions 5-8 select the languages listed below. Selection provides for automatic adjustment of hammer force for specified characters.

Twelve character sets are shown. Provisions are made for up to 16 selectable character sets. (Future expansion)

	TOP DIPSWITCH			
	T5	T6	T7	T8
AE=American English	OFF	OFF	OFF	OFF
GE=German	OFF	OFF	OFF	ON
FR=French	OFF	OFF	ON	ON
DU=Dutch (South African)	OFF	ON	ON	OFF
ND=Norweigan & Danish	OFF	ON	ON	ON
LS=Spanish (South America)	OFF	ON	OFF	OFF
IT=Italian	ON	OFF	OFF	ON
ES=Spanish (European)	ON	OFF	ON	OFF
FS=Finnish & Swedish	ON	OFF	ON	ON
QE=Queen's English	OFF	OFF	ON	OFF
SW=Swiss German & French	OFF	ON	OFF	ON
CA=Canadian Bilingual	ON	OFF	OFF	OFF

CONFIGURATION SWITCHES CENTER DIPSWITCH
****

The center dipswitch on the Daisywriter(TM) 2000/1500 provides for selection of the functions described below:

Center Position C1-C8

Position	1	2	3	4	5	6	7	8
ON	RDY-	PRT DEL	STB-	ABR	---Protocol-----			
OFF	RDY+		STB+		---Selection----			

Position 1

READY POLARITY SELECTION

Selected by C1. C1 ON generates a negative ready signal when a new character can be received. C1 OFF generates a positive ready signal when a new character can be received. Note: IEEE 488 NRFD C1 must be OFF.

Position 2

PRINT CHARACTER AT DELETE(7FH) POSITION ON THE PRINTWHEEL

To print the ASCII character on the printwheel at DELETE (7FH) position set C2 ON. This is required since most programs delete this character. American English printwheels provide a superscript 3 (^{3}) in the DELETE (7FH) position. In IBM protocol C2 must be ON to disable the clear buffer command.

Position 3

STROBE POLARITY SELECTION

Selected by C3. C3 ON indicates negative strobe as required for Centronics. C3 OFF indicates positive strobe as required for Dataproducts.

Position 4

AUTOMATIC BAUD RATE

To automatically adapt the baud rate to the incoming baud rate set C4 ON. NOTE: first send one ASCII character CR (0DH). Wait 2 seconds before transmitting the data. Position B2 (Serial Select) must be ON.

CONFIGURATION SWITCHES CENTER DIPSWITCH

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Positions 5-8

PROTOCOL SELECTION

The center dipswitches 5-8 provide for selection of the protocol which the Daisywriter (TM) will emulate. This emulation capability provides the user with the ability to plug directly into a particular computer with no change of software. Provisions are made for up to 16 different protocols. (Future expansion)

	CENTER DIPSWITCH			
Protocol	C5	C6	C7	C8
NEC 35,55,77 series	OFF	ON	ON	ON
DIABLO 630,1610,1620,NEC 550X	OFF	ON	ON	OFF
QUME SPRINT 9/11	OFF	ON	OFF	ON
ATARI 825,CENTRONICS 737	OFF	ON	OFF	OFF
IBM PC	OFF	OFF	ON	ON
DIAGNOSTIC	OFF	OFF	ON	OFF
DAISYWRITER	OFF	OFF	OFF	ON
DAISYKEY	OFF	OFF	OFF	OFF
DUMBWRITER (disables all protocols)	ON	ON	ON	ON

Commodore Pet operation is provided and described in the Special Hardware Features Section. See Table of Contents.

Diagnostic and Daisykey are described in the Software Command Section. See Table of Contents.

CONFIGURATION SWITCHES BOTTOM DIPSWITCH

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The bottom dipswitch on the Daisywriter (TM) 2000/1500 provides for selection of the functions described below:

Bottom Position B1-B8

Position	1	2	3	4	5	6	7	8
ON	ALF ON	SER	PARO ACK-	PAR ON	----BAUD RATE---			
OFF	ALF OFF	PAR	PARE ACK+	PAR OFF	-----SELECT-----			

Position 1

AUTO LINE FEED

When B1 is set to the ON position, the printer will automatically generate a line feed from a carriage return.

Position 2

SERIAL OR PARALLEL SELECTION

The interface select dipswitch position 2 allows selection of either serial (RS-232C* or Current Loop) or parallel (Centronics 8 bit or IEEE 488) operation. Switch B2 ON for serial, OFF for parallel.

Special cables are provided which produce the necessary interfaces to particular hardware configurations. Ask your CII representative to furnish you a complete list of cables and prices available for purchase.

* Daisywriter automatically adapts to either ETX/ACK or DC1/DC3 (XON/XOFF) RS232C protocols.

Position 3

PARITY ODD OR EVEN SELECT

If B2 is ON (serial select) the position 3 selects odd parity with B3 ON; even parity with B3 OFF.

If B2 is OFF (parallel select) then position 3 is utilized to set acknowledge pulse polarity. Position 3 ON, selects negative ack pulse such as required for the Centronix Interface and position 3 OFF, selects positive ack pulse (NDAC) as required for the IEEE 488 interface.

Position 4

PARITY ON OR OFF SELECT

If B2 is ON (serial select) then position 4 selects parity on with B4 ON; parity OFF with B4 OFF.

If B2 is OFF(parallel select) then position 4 selects the most significant bit of the IEEE 488 device address.

Position 5-8

BAUD RATE / DEVICE SELECT

If B2 is ON, (serial select) these positions provide for the selection of the baud rate as shown below.

If B2 is OFF, (parallel select) these positions provide for selection of the four least significant bits of the IEEE 488 device address. B4 provides for the selection of the most significant bit of the IEEE 488 device address.

Baud Rate	B5	B6	B7	B8	HEX NUMBER
50	ON	ON	ON	ON	0
75	ON	ON	ON	OFF	1
110	ON	ON	OFF	ON	2
134.5	ON	ON	OFF	OFF	3
150	ON	OFF	ON	ON	4
300	ON	OFF	ON	OFF	5
600	ON	OFF	OFF	ON	6
1200	ON	OFF	OFF	OFF	7
1800	OFF	ON	ON	ON	8
2000	OFF	ON	ON	OFF	9
2400	OFF	ON	OFF	ON	A
3600	OFF	ON	OFF	OFF	B
4800	OFF	OFF	ON	ON	C
7200	OFF	OFF	ON	OFF	D
9600	OFF	OFF	OFF	ON	E
19200	OFF	OFF	OFF	OFF	F

PAGE LENGTH

Selected by the two digit BCD thumbwheel (00 to 99) located on front panel.

A zero in the first digit (most significant) is always interpreted as a ten (10). Thus the minimum setting is 10 and the maximum setting is 109. This requires the printer to be in the non-ready state to accept a change in page length. If a change of page length has been made, the top of page will be set to current paper position. Switch selection is based on 6 lines per inch regardless of the current lines per inch setting. The program automatically compensates for current line per inch setting. Use this table as a guide in setting the page length:

Page Length (inches)	Thumbwheel setting (Shown for standard lengths) (lines)
3.0	18
3.5	21
4.0	24
4.5	27
5.0	30
5.5	33
6.0	36
7.0	42
8.0	48
8.5	51
11.0	66
12.0	72
14.0	84
17.0	02

The page length can also be set under program control from 1 to 255 lines and overrides any thumbwheel setting.

FRONT PANEL CONTROLS & INDICATORS MODEL 2000/1500

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PITCH SELECT

The horizontal pitch slide switch sets the number of characters printed per horizontal inch by controlling the distance from the center of one character to the center of the next. The densities selectable are 10, 12 or 15 characters per inch. This selection can also be done under program control.

LINE SPACING SELECT

The line spacing slide switch provides for selection of number of lines fed per line feed. Selection is provided for 1, 1.5 or 2 lines per line feed.

READY / TEST MOMENTARY PUSHBUTTON SWITCH

Alternately depressing READY/TEST will cause the green LED to lite and go out. When the green lite is ON the printer is in the READY or on-line state. When green lite is OFF the printer is in TEST state, also called the non-ready or offline state. Software controls can set the printer on-line and off-line.

POWER INDICATOR

Glows when power is turned ON.

ERROR INDICATOR

A red LED is illuminated continuously when printer is in an error mode. Paper out, ribbon out, cover open, printer jam are possible causes of errors. The error indicator will not be illuminated and the bell will not sound until after the first character is received, however no printing will occur. To reset the error, clear the malfunction then press the READY/TEST to set the printer to the on-line condition.

Special Audible alarm signals:

> Continuous pulsing one long, one short pulse indicates out of paper or out of ribbon.
>
> Continuous pulsing .3sec ON, 1sec OFF pulses indicate cover is open.
>
> Continuous pulsing .3sec ON,.3sec OFF pulses indicate printer jam, printwheel malfunction etc.
>
> NOTE: Bell can be disabled in alarm conditions (ERROR lite on) by depressing the TOF pushbutton switch.

FRONT PANEL CONTROLS AND INDICATORS MODEL 2000/1500

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FORM FEED

When off-line, depressing the TOF will move the paper to the top of the next form if the paper is not at the top of the form. Subsequent depression will result in a complete form being fed.

TOP OF FORM SET

When off-line, depressing the TOF and LF switches simultaneously sets the top of form to the current paper position.

LINE FEED

The line feed switch functions only when printer is off-line. Depressing the line feed switch will cause printer to advance paper one line. Holding it down for greater than 2 seconds will cause continuous line feeds.

AUTO PAPER FEED

When the printer is in cut sheet mode (switches T1 and T2 OFF) the following procedures should be used for inserting the next sheet of paper:

1. Pull paper release towards you.
2. Insert paper so it rests against the platen.
3. Return paper release to its original position.
4. Depress TOF switch, which automatically advances the paper to the top line.
5. Depress the READY/TEST switch.

NOTE:

When the printer power is first turned on the unit will be initialized to the READY position. The printer must be deselected before the above procedure will apply. To deselect the printer depress the READY/TEST pushbutton. The READY green lite will go OFF and the head will center. Then the above procedure will apply.

REPRINT BUFFER

The unit must be in the non-ready position (green lite OFF). Depress the READY/TEST switch holding it in, then depress the TOF and hold it in, then release the READY/TEST switch and finally release the TOF switch. The printer will execute the automatic reprint buffer command. The reprint buffer command can also be issued in software.

CLEAR BUFFER & RESET

The unit must be in the non-ready position (green lite OFF). Depress the READY/TEST switch holding it in, then depress the LF and hold it in, then release the READY/TEST switch and finally release the LF switch. The printer will automatically clear the buffer and reset printer as with turning the power on. The clear buffer command can also be issued in software.

BUFFER STORAGE

The buffer storage provided for the Model 2000 is either 16k x 8 or 48k x 8. The 48k x 8 is optional.

The buffer storage provided for the Model 1500 is 4k x 8.

Contact your CII representative for further information regarding these options.

SELF-TEST

To set self-test the unit must be in the non-ready position (Green lite OFF). Depress the READY/TEST switch holding it in, then depress the LF and TOF switches and hold them in. Release the READY/TEST and then the LF and TOF. The printer will execute a selftest routine and print a sliding pattern of 8 lines, a software copyright statement, and then a printout of the front panel switches and controls and buffer size. The position of the slideswitches is indicated L for left, C for center, R for right. The position of the dipswitches are indicated as D for down and U for up. The buffer size is indicated as 4K or 16K or 48K. The printer will then stop and reset.

BELL

The internal bell is energized by transmission of the ASCII BEL code. Also used internally to signal the operator when paper or ribbon is out, cover is open, or printer malfunction occurred. The bell signal can be shut off during an error condition by depressing the TOF switch.

SELF-DIAGNOSTIC FEATURES

Provision has been made in the design to allow built-in diagnostic features. On power-up the RAMS and ROMS will be checked. If there is no failure, the green lite will lite indicating the RAMS, ROMS and CPU have passed the diagnostic test. This is an important feature since it gives the user a validation of the system. A list of the LED displays:

Green OFF	Red OFF	ROM testing
Green OFF	Red ON	RAM testing
Green ON	Red ON	Indicates that one is in Automatic Baud Rate Mode. The printer will remain in this condition until a carriage return (0DH) is received.
Green ON	Red OFF	Printer is in READY state

If a failure is detected, the light condition shown above will indicate the problem area. If one is in serial mode (switch B2 ON) and the cable is not connected, the printer will sound a single 1 second alarm.

SERIAL ERROR INDICATOR

When in serial mode (switch B2 ON) and a communication error occurs (parity error, framing error, overrun error) a special character (¢) will replace the character that caused the error.

PRINT HALT

Depressing the READY/TEST switch will halt printing at the end of current print line, the bell will sound, and then the carriage will move to column fifty. Depressing the READY/TEST switch again will return the carriage to the first column.

RESETTING THE PRINTWHEEL WITHOUT CLEARING THE BUFFER

To reset the printwheel first set the printer from the ready position (Green lite ON) to the non-ready position (Green lite OFF) by depressing the READY/TEST pushbutton switch on the front panel. Then depress the READY/TEST pushbutton a second time. The carriage will go to the left position and the printwheel will be reset. This function is utilized to initialize the printwheel if it is changed during the printing of a document.

COMMODORE PET OPERATION MODEL 2000/1500

****

The Daisywriter (TM) Model 2000/1500 provides for operation with the Commodore Computer. To select this operation requires grounding the SPIN input on pin 39 of the interface connector. This is conveniently done by jumpering pin 38 to pin 39 on the interface connector. CAUTION: Jumpering pins 38 to 39 may not be necessary with COMPET word processing program. This operation was designed with the CBM alternate character set operation and requires the dipswitches to be set for IEEE 488 operation. For your convenience they are listed below. This interface can work with any protocol.

Set B1 ON ; auto line feed from carriage return
Set B2 OFF; parallel select
Set B3 OFF; NDAC positive when data is received.
Set C1 OFF; NRFD positive when not busy
Set B4-B8 ; IEEE 488 Device Address; Set this to the complement of the desired address. B4 is the most significant bit and B8 is the least significant bit
Example: Device Address 5 would be set as: B4-ON;B5-ON;B6-OFF;B7-ON;B8-OFF.

The interface cable will connect from the Daisywriter (TM) Interface connector to J1 on the Commodore 8032 or the IEEE AMP daisychain cable. (AMP Part No. 552661-1).

Signal Desig.	Daisywriter pin no.	Commodore J1 pin no.	Standard AMP IEEE 552661-1
NRFD	11	7	7
NRFDRTN	12	H	19
NDAC	13	8	8
NDACRTN	14	J	20
ATN	44	11	11
ATNRTN	42	M	23
IFC	33	9	9
IFCRTN	32	K	21
DAV	35	6	6
DAVRTN	34	F	18
DA0+	17	1	1
DA1+	19	2	2
DA2+	21	3	3
DA3+	23	4	4
DA4+	25	A	13
DA5+	27	B	14
DA6+	29	C	15
DA7+	31	D	16

INPUT/OUTPUT CONNECTOR CII INTERFACE

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The following pin assignments are for the 50 pin printed circuit input/output connector located on the rear of the CII 2000/1500 daisywriter printer.

Pin No.	Signal Name	Description
31	DA7+	Parallel data input bit 7
30	DA7RTN	" " " " " return
29	DA6+	" " " " 6
28	DA6RTN	" " " " " return
27	DA5+	" " " " 5
26	DA5RTN	" " " " " return
25	DA4+	" " " " 4
24	DA4RTN	" " " " " return
23	DA3+	" " " " 3
22	DA3RTN	" " " " " return
21	DA2+	" " " " 2
20	DA2RTN	" " " " " return
19	DA1+	" " " " 1
18	DA1RTN	" " " " " return
17	DA0+	" " " " 0
16	DA0RTN	" " " " " return
37	STB	Strobe DC Terminated 110 ohms
36	STBRTN	Strobe DC Terminated return
41	NSTB	Strobe AC Terminated 110 ohms
40	NSTBRTN	Strobe AC Terminated return
11	RDY	Ready/Busy NRFD Output
12	RDYRTN	Ready/Busy return
13	ACK	ACK/488 NDAC Output
14	ACKRTN	ACK/488 NDAC return
9	SELECT	Select Output
47	RSSCA	RS232 Secondary Request to Send
44	ATTN	488 Attention Input
42	ATTNRTN	488 Attention return
35	DAV	488 Data Available Input
34	DAVRTN	488 Data Available return
33	IFC	488 Printer Reset Input
32	IFCRTN	488 Printer Reset return
3	RSBB	RS232 Receive Data Input
4	RSCF	RS232 Carrier Detect Input
1	RSCC	RS232 Data Set Ready Input
2	RSCB	RS232 Clear to Send Input
48	RSBA	RS232 Transmit Data Output
50	RSCA	RS232 Request to Send Output
49	RSCD	RS232 Data Term Ready Output
6	RSAB	RS232 Signal Ground Output
46	RSAA	RS232 Frame Ground Output

****

Input/output connector pin designations continued

Pin No.	Signal Name	Description
15	DTR	TTL Data Term Ready Output
45	DTRRTN	TTL Data Term Ready return
7	TTYI+	Current Loop Serial Input
10	TTYI-	Current Loop Serial Input
8	TTYO+	Current Loop Serial Output
5	TTYO-	Current Loop Serial Output
43	+5v (500ma max)	For CII Test Only
39	SPIN+	Special Input (Commodore Pet)
38	SPINRTN	Special Input return

REAR PANEL
CONNECTOR

REAR VIEW

```
TOP LEFT ----> RSCC  1 *  2 RSCB
               RSBB  3 *  4 RSCF
              TTYO-  5 *  6 RSAB
              TTYI+  7 *  8 TTYO+
             SELECT  9 * 10 TTYI-
               RDY  11 * 12 RDYRTN
               ACK  13 * 14 ACKRTN
               DTR  15 * 16 DA0RTN
              DA0+  17 * 18 DA1RTN
              DA1+  19 * 20 DA2RTN
              DA2+  21 * 22 DA3RTN
              DA3+  23 * 24 DA4RTN
              DA4+  25 * 26 DA5RTN
              DA5+  27 * 28 DA6RTN
              DA6+  29 * 30 DA7RTN
              DA7+  31 * 32 IFCRTN
               IFC  33 * 34 DAVRTN
               DAV  35 * 36 STBRTN
              .STB  37 * 38 SPINRTN
              SPIN  39 * 40 NSTBRTN
              NSTB  41 * 42 ATTNRTN
               +5V  43 * 44 ATTN
            DTRRTN  45 * 46 RSAA
             RSSCA  47 * 48 RSBA
              RSCD  49 * 50 RSCA
```

REAR PANEL
50PIN CARD-EDGE
MATING CONNECTORS

1. KEL-AM Inc.
   CONNECTOR
   P/N RC250142-5
   (Solder Terminals)

2. AMP
   CONNECTOR
   P/N 1-583717
   CONTACT
   P/N 583616-5(crimp)
   P/N 583854-3(solder)

3. VIKING
   CONNECTOR
   3VH25/1JN-5
   (Solder Termimals)

4. 3M ScotchFlex
   3415-001
   Flat Cable

CII MODEL 2000/1500

The following abbreviations will be used throughout the CII MODEL 2000/1500 software command description:

1. n1 n2 represent hexadecimal numbers (00H through FFH). Where n1 is the most significant and n2 is the least significant.
2. n represents an ASCII character (00H through 7FH).
3. s represents any printable ASCII Character (20H through 7FH).
4. Software commands override front panel switches and other controls, except for the front panel halt control READY/TEST pushbutton.

FORMS CONTROL LENGTH SET

ESC FF n1 n2 sets the form length to the number of lines per page. This overrides the front panel 2 digit thumbwheel. Sets top of form to the current paper position. (Daisykey ! ' n1 n2). For explanation of Daisykey commands see Daisykey Section.

Example: To set form length to 90 lines look up the hex value of decimal 90 in Appendix C, which is 5A. Send ESC FF 5 A, which in ASCII hex code is 1B 0C 35 41.

VERTICAL PITCH SET

ESC 8 n1 n2 sets the vertical pitch to any increment in 1/48 inch steps. Maximum incremental value accepted is 127, which converted to hex code using Appendix C is 7E. Note: 127/48 is the maximum vertical pitch, or approximately 2-5/8 inches.

Example: To set vertical pitch to 6/48 or 8 lines per inch look up the hex value for the decimal value 6 in Appendix C which is 06. Send ESC 8 0 6 which in ASCII hex code is 1B 38 30 36.

VERTICAL SPACING SELECT

ESC 3 sets the vertical spacing at 1.0 lines per line feed.
ESC 4 sets the vertical spacing at 1.5 lines per line feed.
ESC 6 sets the vertical spacing at 2.0 lines per line feed.

In ASCII hex code ESC 3 is 1B 33;ESC 4 is 1B 34;ESC 6 is 1B 36

HORIZONTAL PITCH SELECT

ESC P sets the horizontal pitch at 10 characters per inch.
ESC E sets the horizontal pitch at 12 characters per inch.
ESC M sets the horizontal pitch at 15 characters per inch.

In ASCII hex code ESC P is 1B 50;ESC E is 1B 45;ESC M is 1B 4D

HORIZONTAL PITCH SELECT (ALTERNATE)

ESC US (1FH) n1 n2 sets horizontal pitch in increments of 1/120 inch steps. Maximum pitch is 1-1/20 of an inch. n1, n2 can only be even numbers. (Daisykey ! < n1 n2).

Example: To set pitch for 6/120 or 20 characters per inch, Look up the hex equivalent for the decimal number 6 in Appendix C which is 06. Send ESC US 0 6 which in ASCII hex code is 1B 1F 30 36.

SET LEFT MARGIN ABSOLUTE

ESC 9 n1 n2 sets the left margin at an absolute character position.

Example: To set left margin at character position 10, subtract 1 which is 9, then look up the hex equivalent of 9 in Appendix C which is 09. Send ESC 9 0 9 which in ASCII hex code is 1B 39 30 39. We subtract one because the character position legends engraved on the top cover begin at 0 instead of 1.

CLEAR LEFT AND RIGHT MARGINS AND HORIZONTAL TABS

ESC 1 clears left and right margins and horizontal tabs. Resets left margin to the extreme left position and the right margin to the extreme right position. ASCII hex code 1B 31.

SET RIGHT MARGIN ABSOLUTE

ESC 0 n1 n2 sets the right margin at an absolute character position.

Example: To set right margin at character position 70, subtract 1 which is 69, look up the hex equivalent of 69 in Appendix C which is 45. Send ESC 0 4 5 which in ASCII hex code is 1B 30 34 35.

SET TOP MARGIN

ESC + sets top margin at current line position. ASCII hex code 1B 2B.

SET BOTTOM MARGIN

ESC - sets bottom margin at current line position. If bottom margin is set above the top margin the set bottom margin command is ignored. ASCII hex code 1B 2D.

SET HORIZONTAL TAB TABLE (UP TO 255 TABS)

ESC HT n1 n2 sets a horizontal tab at a specified character position. (Daisykey ! $ n1 n2).

Example: To set a horizontal tab at character position 10, subtract one,look up the hex equivalent 9 in Appendix C which is 09. Send ESC HT 0 9 which in ASCII hex code is 1B 09 30 39.

SET VERTICAL TAB TABLE (UP TO 255 TABS)

ESC VT n1 n2 sets a vertical tab at a specified line count. (Daisykey ! % n1 n2)

Example: To set a vertical tab at line 20, subtract one and look up the hex equivalent of 19 in Appendix C which is 13. Send ESC VT 1 3 which in ASCII hex code is 1B 0B 31 33.

CLEAR PAGE LENGTH AND VERTICAL TABS

ESC 2 clears the page length and vertical tab table. Resets form length to switch setting. ASCII hex code 1B 32.

HORIZONTAL TAB COMMAND

HT (09H) will cause the carriage to move to the next horizontal tab in the tab table. In the case there is no tab point at or left of the right margin the carriage will not move. Tab stops beyond right margin are ignored. (Daisykey ! C)

CARRIAGE RETURN

CR (0DH) will initiate printing of one line of data from the data buffer. No line feed will occur unless AUTO LINE FEED dipswitch B1 is on.

BACKSPACE

BS (08H) will cause the printing head to move one column to the left of its present position. (Daisykey ! S)

LINE FEED

LF (0AH) will cause the paper to be rolled upward past the printing head the height of one line. (Daisykey ! G)

PAPER FEED FORWARD

ESC F n1 n2 will cause the printer to feed the paper in the forward direction the hex number of lines specified by n1 n2. Paper feed forward will not pass through bottom of form if switch T1 is OFF (cut sheet operation).

Example: To feed paper forward 26 lines, look up the hex equivalent of 26 in Appendix C which is 1A. Send ESC F 1 A which in ASCII hex code is 1B 46 31 41.

PAPER FEED REVERSE

ESC R n1 n2 will cause the printer to feed the paper in the reverse direction the hex number of lines specified by n1 n2. Paper feed reverse will not pass through top of form.

Example: To feed paper reverse 40 lines, look up the hex equivalent of 40 in Appendix C which is 28. Send ESC R 2 8 which in ASCII hex code is 1B 52 32 38.

SUBSCRIPT

ESC U will cause forward paper motion of 1/2 line. ASCII hex code 1B 55. Use ESC D to return paper to original position.

SUPERSCRIPT

ESC D will cause reverse paper motion of 1/2 line. ASCII hex code 1B 44. Use ESC U to return paper to original position.

FORM FEED

FF (0CH) will eject a page. Then feed the following page to the top margin. FORM FEED is not operative if the page is already at the top margin. (Daisykey ! L)

VERTICAL TAB

VT (0BH) will feed the paper to the next vertical tab position in the vertical tab table. If there is no next tab position before the form size, no motion will occur. (Daisykey ! K)

PRINT IN RED (OPTIONAL)

ESC A will cause printer to print in red. ASCII hex code 1B 41.

PRINT IN BLACK

ESC B will cause printer to print in black. ASCII hex code 1B 42.

BOLDFACE ON

ESC O causes multiple striking for each character, resulting in a darker appearance. ASCII hex code 1B 4F.

SHADOW PRINTING ON

ESC W causes the printer to print each character twice with the second strike 1/60 of an inch to the right of the first position. ASCII hex code 1B 57.

BOLDFACE AND SHADOW OFF

ESC & stops further effect from any previous boldface or shadow printing commands. ASCII hex code 1B 26.

AUTOMATIC UNDERLINE ON

ESC I causes the printer to begin printing the underline character beneath all printed characters. The "space" character is not underlined. ASCII hex code 1B 49.

AUTOMATIC UNDERLINE OFF

ESC J causes the printer to terminate auto underlining. ASCII hex code 1B 4A.

CANCEL ENHANCED PRINTING

ESC X cancels all enhanced printing modes - boldface, shadow, underline, print in red, program mode, centering and justification. ASCII hex code 1B 58.

AUTOMATIC JUSTIFICATION

ESC H causes all following lines to be justified. Justification will cause each line of characters to occupy the entire horizontal position from the first printable character position on the line to the right margin within a justification limit.

CHANGE JUSTIFICATION LIMIT

ESC UA (5EH) n1 n2 changes the justification value to n1 n2. Default limit is plus or minus 200/120 of an inch from the right margin. When n1 n2 is 00H to 7FH the justication limit is increased by 0 to 127 and when n1 n2 is 81H to FFH the justification limit is decreased by 1 to 127.

To change limits to plus or minus 60/120 or 1/2 inch First compute the decimal value you must change the limit value. In this example 200-60=140 increments to decrease limit value to 60. Note when limit value is a decreased 80H must be added to the table value. See Table in Appendix G. Send ESC UA E 4(100=64H+80H) ESC UA A 8(40=28+80H) ASCII hex character sequences 1B 5E 45 34;1B 5E 41 38.

AUTOMATIC CENTERING

ESC = causes the following line of characters to be centered between left and right margins. Automatically turned off with a carriage return. ASCII hex code 1B 3D.

AUTO PROPORTIONAL SPACING ON

ESC Y causes the printer to print in the proportional space mode. Proportional spacing uses an internal table optimized to Linotype (TM) printing standards. ASCII hex code 1B 59.

AUTO PROPORTIONAL SPACING OFF

ESC Q cancels the auto proportional spacing mode. ASCII hex code 1B 51.

CHANGE PROPORTIONAL SPACING VALUE

ESC SP (20H) s n changes ASCII character s proportional spacing value to n. See Table in Appendix F.

GRAPHICS MODE ON

ESC . enters graphics mode where carriage movement does not occur automatically when a character is printed. All horizontal and vertical movement must be specified. ASCII hex code 1B 2E.

EXIT GRAPHICS MODE

ESC / cancels graphics mode. ASCII hex code 1B 2F.

CLEAR TEXT BUFFER

ESC DC2 clears the text buffer. ASCII hex code 1B 12. (Daisykey ! 5)

AUTOMATIC REPRINT

ESC DC4 n1 n2 causes the printer to reprint n1 n2 additional copies of the text stored in its memory specified by the hex value n1 n2. (Daisykey ! 7 n1 n2)

Example: To reprint the buffer 15 times first look up the hex equivalent of 15 in Appendix C which if 0F. Send ESC DC4 0 F which in ASCII hex code is 1B 14 30 46.

ESCAPE

ESC (1BH) is utilized to combine and to perform extension codes utilized in the software commands.

SELF TEST

See description in special features section

BELL

BEL (07H) causes the alarm to sound for approximately 2 seconds.

BIDIRECTIONAL PRINTING

No command required as printer optimizes the printing through a sophisticated program.

BAUD RATE SELECT

ESC V n will set the printer to the baud rate specified by the last four bits of the ASCII character n. Choose appropriate ASCII character from TABLE A.

Example: To select baud rate of 1200 look up ASCII character n to send in Table A which is G. Send ESC V G which in ASCII hex code is 1B 56 47.

READY SELECT

DC1 (11H) will set printer to the on-line state.

DESELECT

DC3 (13H) will set the printer to the off-line state. Note: Printer can only be brought back on line with a DC1 command.

IMMEDIATE RESET

ESC SUB S will reset machine as with turning the power on. In ASCII hex code this is 1B 1A 53. (Daisykey ! : S)

REMOTE RESET

ESC # B will cause the machine to reset. In ASCII hex code this is 1B 23 42. (Daisykey ! # B)

CHOOSE PROTOCOL

ESC ESC n allows change of protocols. Protocol selected depends on last four bits of n. For reference see TABLE B.

Example: To select the IBM protocol look up the ASCII character n to select IBM in TABLE B which is L. Send ESC ESC L which in ASCII hex code is 1B 1B 4C.

SERIAL INPUT SELECT

SI (0FH) will set the printer to the serial input mode. Used for CII testing.

SERIAL OFF

SO (0EH) will set the printer to the parallel input mode. Used for CII testing.

SPACE

SP (20H) will cause the carriage to move right one character width.

PRINT CHARACTER AT "SPACE" LOCATION

EM (19H) will print character at "space" location (20H) on print wheel. American English printwheel has a (¢) at this location. Printed only once for each command sent. (Daisykey ! N)

DAISYPLOT GRAPHICS

ESC ! puts printer into DAISYPLOT graphics control. See DAISYPLOT description and examples in appendix A. ASCII hex code 1B 21

AUTO LINE AFTER CARRIAGE RETURN ON

ESC , will cause the printer to generate a line feed after each carriage received. In ASCII hex code this is 1B 2C.

AUTO LINE FEED AFTER CARRIAGE RETURN OFF

ESC * terminates the automatic generation of a line feed after a carriage return. In ASCII hex code this is 1B 2A.

DAISYKEY

When Daisykey protocol is selected, ESC is replaced by !. If ! cannot be used as the escape character a new replacement character can be selected by entering ! ? n, where n is the new replacement "ESC" character. This allows one to send escape commands for users that do not have capabilities of sending the ESC character. Daisykey also provides entry of control codes and special functions as text (See Appendix D).

Example: Suppose you wish to substitute the ASCII character "?" for the ! ESC character. Enter !?? which will replace the ? as the new escape character. ASCII hex code is 21 3F 3F.

NOTE: To use DAISYKEY PROTOCOL, first select the protocol (dipswitches C5 through C8 OFF); then select the desired protocol using the CHOOSE PROTOCOL software command. (See Example in Appendix E.)

DIAGNOSTIC PROTOCOL

The diagnostic protocol is utilized for debug of incoming data and software commands to the Daisywriter (TM) Model 2000/1500. In this protocol all ASCII characters are printed as hex values. The control characters in ASCII groups 0 and 1 (00H to 1FH) are underlined, the remaining characters are printed as their ASCII hex value. (See Example in Appendix E.)

ETX/ACK

When an ETX is received an ACK is returned (serial only) if the buffer has at least 303 empty bytes. If the buffer has less than 303 bytes the ACK is delayed until the buffer has 303 empty bytes. Does not send ACK back if repeat function is currently pending.

X-ON/X-OFF

DC1 (11H) X-ON is returned (serial only) whenever the number of empty bytes in the buffer has increased to 309.

DC3 (13H) X-OFF is returned (serial only) whenever the number of empty bytes has decreased to 153.

SELECT BAUD - TABLE A

ASCII character	BAUD value
@	50
A	75
B	110
C	134.5
D	150
E	300
F	600
G	1200
H	1800
I	2000
J	2400
K	3600
L	4800
M	7200
N	9600
O	19200

SELECT PROTOCOL - TABLE B

ASCII character	Protocol
A	not defined
B	" "
C	" "
D	" "
E	" "
F	" "
G	" "
H	NEC 35,55,77 SERIES
I	DIABLO 630,1610,1620
J	QUME SPRINT 9/11
K	ATARI 825,CENTRONICS 737
L	IBM PC
M	DIAGNOSTIC
N	DAISYWRITER
O	DAISYKEY
@	DUMBWRITER

DAISYPLOT GRAPHICS

DAISYPLOT graphics, also called Vector plotting, allows one to create charts and graphs with relative ease. Movement and plotting is achieved through incremental steps as close as 1/60 of an inch horizontally and 1/48 of an inch vertically. (Additional graphics information is available in a supplement to this manual.)

ABSOLUTE VECTOR PLOTTING (Mode 1)

ESC ! 1 enters absolute vector plotting. When in absolute vector plotting one must enter a sequence of five characters, s1 s2 s3 s4 s5. The five characters will represent a vector that will be plotted. The first vector will be a MOVE only command which will position the print head without plotting. Thereafter each vector will be plotted.

The five characters s1 s2 s3 s4 s5 may only be hexadecimal numbers (20H through 7FH) and are entered as their ASCII representation.

The Y component of the vector is made up from s1, s2, and s3. The Y component represents the number of increments (from the top of form) position.

Y vector component

LSB	0	BIT 2	S2
	1	BIT 3	S2
	2	BIT 0	S3
	3	BIT 1	S3
	4	BIT 2	S3
	5	BIT 3	S3
	6	BIT 4	S3
	7	BIT 0	S1
	0	BIT 1	S1
	1	BIT 2	S1
	2	BIT 3	S1
	3	BIT 4	S1
	4		
	5		
	6		
MSB	7		

The X component of the vector is made up from s2, s4, and s5. The X component represents the number of increments (from the left margin) position.

X vector component

LSB	0	.... BIT 0	S2
	1	.... BIT 1	S2
	2	.... BIT 0	S5
	3	.... BIT 1	S5
	4	.... BIT 2	S5
	5	.... BIT 3	S5
	6	.... BIT 4	S5
	7	.... BIT 0	S4
	0	.... BIT 1	S4
	1	.... BIT 2	S4
	2	.... BIT 3	S4
	3	.... BIT 4	S4
	4		
	5		
	6		
MSB	7		

NOTE: The second character, s2, contains information about the X component and the Y component.

ABSOLUTE VECTOR PLOTTING (Mode 2)

ESC ! 2 enters absolute vector plotting. Mode 2 is the same as Mode 1 with the exception that the first vector will be plotted.

CANCEL ABSOLUTE VECTOR PLOTTING

To cancel absolute vector plotting the first character s1 must be a CR (0DH). Vertical and horizontal motion increments will be restored to their switch setting values.

RELATIVE VECTOR PLOTTING (Mode 1)

ESC ! 3 enters relative vector plotting. When in relative vector plotting one must enter a sequence of six characters, s0 s1 s2 s3 s4 s5. The six characters will represent a vector that will be plotted. The first vector will be a MOVE only command which will position the print head without plotting. Thereafter each vector will be plotted.

The six characters s0 s1 s2 s3 s4 s5 may only be hexadecimal numbers (20H through 7FH) and are entered as their ASCII representation.

The Y and X component's are defined exactly as explained in the section on Absolute Vector Plotting. The X and Y component use characters s1 through s5. The first character s0 is the sign character where the least significant bit (bit 0) determines the sign of the X component. The next least significant bit of s0 (bit 1) determines the sign of the Y component. (1 is negative, 0 is positive for each bit)

RELATIVE VECTOR PLOTTING (Mode 2)

ESC ! 4 enters relative vector plotting. Mode 2 is the same as Mode 1 with the exception that the first vector will be plotted.

CANCEL RELATIVE VECTOR PLOTTING

To cancel relative vector plotting the first character s0 must be a CR (0DH). Vertical and horizontal motion increments will be restored to their switch setting values.

CHANGE PLOT CHARACTER

ESC " s will change the plot character to s, where s can be any printable ASCII character.

SET PLOT INCREMENT

ESC ! n1 n2 will change the horizontal and vertical motion increment. n1 n2 may only be hexadecimal numbers from 20H through 3FH and are entered as their ASCII representation.

APPENDIX B ASCII TABLE AMERICAN ENGLISH

****

					CONTROL CODES *		PRINTABLE			CHARACTERS		
b_7					0	0	0	0	1	1	1	1
b_6					0	0	1	1	0	0	1	1
b_5					0	1	0	1	0	1	0	1
b_4	b_3	b_2	b_1	Column	0	1	2	3	4	5	6	7
				Row								
0	0	0	0	0	NUL	DLE	SP(¢)	0	@	P	°	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	A	LF	SUB	*	:	J	Z	j	z
1	0	1	1	B	VT	ESC	+	;	K	[	k	¼
1	1	0	0	C	FF	FS	,	<	L	±	l	½
1	1	0	1	D	CR	GS	-	=	M	]	m	¶
1	1	1	0	E	SO	RS	.	>	N	²	n	§
1	1	1	1	F	SI	US	/	?	O	_	o	DEL(³)

Language AE American English
Font Prestige 1012

* Control Codes columns 0 and 1 are printable in the CII Diagnostic protocol.

APPENDIX C

HEX TO DECIMAL CONVERSION TABLE

DEC #	HEX n1n2	DEC #	HEX n1n2	DEC #	HEX n1n2	DEC #	HEX n1n2	DEC #	HEX n1n2	DEC #	HEX n1n2
00	00	48	30	96	60	144	90	192	C0	240	F0
01	01	49	31	97	61	145	91	193	C1	241	F1
02	02	50	32	98	62	146	92	194	C2	242	F2
03	03	51	33	99	63	147	93	195	C3	243	F3
04	04	52	34	100	64	148	94	196	C4	244	F4
05	05	53	35	101	65	149	95	197	C5	245	F5
06	06	54	36	102	66	150	96	198	C6	246	F6
07	07	55	37	103	67	151	97	199	C7	247	F7
08	08	56	38	104	68	152	98	200	C8	248	F8
09	09	57	39	105	69	153	99	201	C9	249	F9
10	0A	58	3A	106	6A	154	9A	202	CA	250	FA
11	0B	59	3B	107	6B	155	9B	203	CB	251	FB
12	0C	60	3C	108	6C	156	9C	204	CC	252	FC
13	0D	61	3D	109	6D	157	9D	205	CD	253	FD
14	0E	62	3E	110	6E	158	9E	206	CE	254	FE
15	0F	63	3F	111	6F	159	9F	207	CF	255	FF
16	10	64	40	112	70	160	A0	208	D0		
17	11	65	41	113	71	161	A1	209	D1		
18	12	66	42	114	72	162	A2	210	D2		
19	13	67	43	115	73	163	A3	211	D3		
20	14	68	44	116	74	164	A4	212	D4		
21	15	69	45	117	75	165	A5	213	D5		
22	16	70	46	118	76	166	A6	214	D6		
23	17	71	47	119	77	167	A7	215	D7		
24	18	72	48	120	78	168	A8	216	D8		
25	19	73	49	121	79	169	A9	217	D9		
26	1A	74	4A	122	7A	170	AA	218	DA		
27	1B	75	4B	123	7B	171	AB	219	DB		
28	1C	76	4C	124	7C	172	AC	220	DC		
29	1D	77	4D	125	7D	173	AD	221	DD		
30	1E	78	4E	126	7E	174	AE	222	DE		
31	1F	79	4F	127	7F	175	AF	223	DF		
32	20	80	50	128	80	176	B0	224	E0		
33	21	81	51	129	81	177	B1	225	E1		
34	22	82	52	130	82	178	B2	226	E2		
35	23	83	53	131	83	179	B3	227	E3		
36	24	84	54	132	84	180	B4	228	E4		
37	25	85	55	133	85	181	B5	229	E5		
38	26	86	56	134	86	182	B6	230	E6		
39	27	87	57	135	87	183	B7	231	E7		
40	28	88	58	136	88	184	B8	232	E8		
41	29	89	59	137	89	185	B9	233	E9		
42	2A	90	5A	138	8A	186	BA	234	EA		
43	2B	91	5B	139	8B	187	BB	235	EB		
44	2C	92	5C	140	8C	188	BC	236	EC		
45	2D	93	5D	141	8D	189	BD	237	ED		
46	2E	94	5E	142	8E	190	BE	238	EE		
47	2F	95	5F	143	8F	191	BF	239	EF		

APPENDIX D SHORTHAND SUMMARY OF SOFTWARE COMMANDS

****

CONTROL CODES

ASCII Character	Hex Value	Daisykey Code	Function
BEL	07	!;	Bell
BS	08	!S	Backspace
CR	0D		Carriage Return
DC1	11		Select Printer
DC2	12		
DC3	13		Set Printer off-line
DC4	14		
EM	19	!N	Print in "SP" location
ESC	1B	!	Escape
ETX	03	!>	End of Text
FF	0C	!L	Form Feed
HT	09	!C	Horizontal Tab
LF	0A	!G	Line Feed
SI	0E		Parallel Select
SO	0F		Serial Select
SP	20		Space
STX	02		Start of Text
SUB	1A		
US	1F		
VT	0B	!K	Vertical Tab

CARRIAGE MOVEMENT

ESC P	Set Horizontal Pitch to 10ch/inch
ESC E	Set Horizontal Pitch to 12ch/inch
ESC M	Set Horizontal Pitch to 15ch/inch
ESC US n1 n2	Set Horizontal Pitch Variable (Daisykey ! < n1 n2)
ESC 9 n1 n2	Set Left Margin Absolute
ESC 0 n1 n2	Set Right Margin Absolute
ESC 1	Clear Right & Left Margin & H Tabs
ESC HT n1 n2	Set Horizontal Tab Table (Daisykey ! $ n1 n2)

GRAPHICS

ESC .	Graphics mode ON
ESC /	Cancel graphics mode
ESC !	Daisyplot ON

APPENDIX D, cont. SHORTHAND SUMMARY OF SOFTWARE COMMANDS

****

PAPER MOVEMENT

ESC 3	Set Vertical Spacing at 1.0line/LF
ESC 4	Set Vertical Spacing at 1.5lines/LF
ESC 6	Set Vertical Spacing at 2.0lines/LF
ESC 8 n1 n2	Set Vertical Pitch
ESC FF n1 n2	Set Form Length (Daisykey ! ' n1 n2)
ESC +	Set Top Margin
ESC -	Set Bottom Margin
ESC VT n1 n2	Set Vertical Tab Table (Daisykey ! % n1 n2)
ESC 2	Clear page length BM,TM & V Tabs
ESC F n1 n2	Paper Feed Forward number of lines
ESC R n1 n2	Paper Feed Reverse number of lines

WORD PROCESSING FUNCTIONS

ESC U	Subscript
ESC D	Superscript
ESC O	Boldface ON
ESC W	Shadow Print ON
ESC A	Print in RED (Optional)
ESC B	Print in BLK
ESC &	Boldface and Shadow OFF
ESC I	Underline ON
ESC J	Underline OFF
ESC H	Auto Justification ON
ESC UA n1 n2	Change Justification Limits
ESC =	Auto Centering ON
ESC X	Boldface,Shadow,Print in RED, Underline,Justification,Centering OFF
ESC Y	Proportional spacing ON
ESC Q	Proportional spacing OFF
ESC SP s n	Change proportional spacing value

GENERAL

ESC DC2	Clear Text Buffer (Daisykey ! 5)
ESC DC4 n1 n2	Reprint Text Buffer (Daisykey ! 7 n1 n2)
ESC V n	Select Baud Rate
ESC SUB S	Immediate reset (Daisykey ! : S)
ESC # B	Remote reset (Daisykey ! # B)
ESC ESC n	Select Protocol
ESC ,	Auto line feed after CR ON
ESC *	Auto line feed after CR OFF

APPENDIX E SOFTWARE EXAMPLES

****

This section contains the software examples for DAISYKEY and DIAGNOSTICS.

DAISYKEY

The daisykey example is shown on sheet 35. The following explanations are for the escape sequences used.

!!N - Select DAISYWRITER protocol
!045 - Set right margin to character position 70
!H - Turn ON justification
!X - Turn OFF justification
!!O - Select DAISYKEY protocol

To print the document set the protocol to DAISYKEY. The finished document will be as shown on sheet 1 of this manual.

DIAGNOSTIC

The DIAGNOSTIC protocol example is shown on sheet 36.

!!N !045 (EXAMPLE OF USE OF DAISYKEY)

CONFIGURATION SWITCHES TOP DIPSWITCH

`**********************************************************`

!H
The top dipswitch on the Daisywriter(TM) 2000/1500 provides for selection of the functions below:
!X
Top Position T1-T8

Position	1	2	3	4	5	6	7	8
ON	PAPR CONT	SHT FDR	IRC	8LPI	---LANGUAGE-----			
OFF	PAPR CUT			6LPI	----SELECT------			

Position 1

CONTINUOUS / CUT SHEET SELECT

!H

When switches T1 and T2 are OFF, the printer will recognize the end of one sheet, sound the alarm for 1 second and go off-line. To resume operation insert a new sheet of paper and position it to the mechanical top of form, then press READY/TEST to go on-line. Mechanical top of form is defined as the horizontal red line located on the paper guide. For the first five lines the paper bail will be lifted automatically to allow the cut sheet to pass through the roller guides. Print will resume for one sheet.

For continuous paper set switch T1 ON. The printer will allow continuous printing of the text without going off-line.

Position 2

SHEET FEEDER SELECT

T2 ON provides for a special program required when utilizing a sheet feeder. Contact your CII representative for further information regarding this option.

Position 3

INVERT REVERSE CHANNEL SELECT

This switch inverts the polarity of the reverse channel signal on pin 47 of the I/O connector. This signal normally goes negative when busy and is positive when not busy, so if IRC is ON (T3 ON) the polarity of signalling will be reversed. RSSCA+ is normally on pin 11 of the RS-232 I/O.
!X !!O

APPENDIX E, cont. DIAGNOSTIC EXAMPLE

This is an example of the use of the diagnostic protocol in the Daisywriter Model 2000/1500.

To set-up the unit set the protocol switches to DIAGNOSTIC See protocol selection on Sheet 4. In diagnostic's a line of 50 characters is printed and an automatic carriage return is performed.

EXAMPLE

ESC FF 5 A CR LF LF This is a test of the diagnostic printout of the Daisywriter printer. CR LF

DIAGNOSTIC PRINTOUT

```
1B0C5A0D0A0AThis is a test of the diagnostic print
out of the Daisywriter printer.0D0A
```

APPENDIX F PROPORTIONAL SPACING TABLE

****

Each character width has a maximum value of 12. All values must be left as an even number after a table change.

!	4	@	8	°	2
"	4	A	6	a	6
#	6	B	6	b	6
$	6	C	6	c	6
%	8	D	6	d	6
&	8	E	6	e	6
'	2	F	6	f	4
(	4	G	6	g	6
)	4	H	6	h	6
*	6	I	4	i	4
+	6	J	6	j	6
,	4	K	6	k	6
-	6	L	6	l	4
.	4	M	8	m	6
/	6	N	6	n	6
		O	6	o	6

0	6	P	6	p	6
1	6	Q	6	q	6
2	6	R	6	r	6
3	6	S	6	s	6
4	6	T	6	t	4
5	6	U	6	u	6
6	6	V	6	v	6
7	6	W	8	w	6
8	6	X	6	x	6
9	6	Y	6	y	6
:	4	Z	6	z	6
;	4	[	4	¼	4
<	6	±	6	UA	4
=	6	]	4	¶	6
>	6	²	2	§	6
?	6	_	6	DEL	2

APPENDIX G JUSTIFICATION LIMIT CHANGE TABLE

DEC	HEX INC	HEX DEC
#	n1n2	n1n2
00	00	80
01	01	81
02	02	82
03	03	83
04	04	84
05	05	85
06	06	86
07	07	87
08	08	88
09	09	89
10	0A	8A
11	0B	8B
12	0C	8C
13	0D	8D
14	0E	8E
15	0F	8F
16	10	90
17	11	91
18	12	92
19	13	93
20	14	94
21	15	95
22	16	96
23	17	97
24	18	98
25	19	99
26	1A	9A
27	1B	9B
28	1C	9C
29	1D	9D
30	1E	9E
31	1F	9F
32	20	A0
33	21	A1
34	22	A2
35	23	A3
36	24	A4
37	25	A5
38	26	A6
39	27	A7
40	28	A8
41	29	A9
42	2A	AA
43	2B	AB
44	2C	AC
45	2D	AD
46	2E	AE
47	2F	AF
48	30	B0
49	31	B1
50	32	B2
51	33	B3
52	34	B4
53	35	B5
54	36	B6
55	37	B7
56	38	B8
57	39	B9
58	3A	BA
59	3B	BB
60	3C	BC
61	3D	BD
62	3E	BE
63	3F	BF
64	40	C0
65	41	C1
66	42	C2
67	43	C3
68	44	C4
69	45	C5
70	46	C6
71	47	C7
72	48	C8
73	49	C9
74	4A	CA
75	4B	CB
76	4C	CC
77	4D	CD
78	4E	CE
79	4F	CF
80	50	D0
81	51	D1
82	52	D2
83	53	D3
84	54	D4
85	55	D5
86	56	D6
87	57	D7
88	58	D8
89	59	D9
90	5A	DA
91	5B	DB
92	5C	DC
93	5D	DD
94	5E	DE
95	5F	DF
96	60	E0
97	61	E1
98	62	E2
99	63	E3
100	64	E4
101	65	E5
102	66	E6
103	67	E7
104	68	E8
105	69	E9
106	6A	EA
107	6B	EB
108	6C	EC
109	6D	ED
110	6E	EE
111	6F	EF
112	70	F0
113	71	F1
114	72	F2
115	73	F3
116	74	F4
117	75	F5
118	76	F6
119	77	F7
120	78	F8
121	79	F9
122	7A	FA
123	7B	FB
124	7C	FC
125	7D	FD
126	7E	FE
127	7F	FF

-A-

ABR Auto Baud Rate C4 ON 3
ACK Acknowledge Output 13,14
ACKRTN Acknowledge Return Output 13,14
ACK- Acknowledge Negative Select B3 ON 5
ACK+ Acknowledge Positive Select B3 OFF 5
ALF Auto Line Feed after CR
  Software
    ESC , (ON) 23
    ESC * (OFF) 23
  Hardware B1 ON 5
APPENDIX A DAISYPLOT Graphics Description 26-28
APPENDIX B ASCII Table 29
APPENDIX C Hex to Decimal Conversion Table 30
APPENDIX D Shorthand Summary Software Inst. 31,32
APPENDIX E Daisykey Example 33,34
  Diagnostic Example 35
APPENDIX F Proportional Spacing Table 36
APPENDIX G Justification Limit Change Table 37
ATTN Attention Input IEEE-488 13,14
  T2L Low Indicates Device Address
  on the Data Lines
ATTNRTN Attention Input IEEE-488 Return 13,14

-B-

Bail Operation 1
Baud Rate
  Fixed Selection by Dipswitches B5-B8 5,6
  Adaptive (ABR) C4 ON 3
  Programmable ESC V n 22,25,32
Bell Description 10
Buffer
  Software Commands
    Clear ESC DC2 21,32
    Reprint ESC DC4 n1 n2 21,32
  Hardware
    Clear Using Front Panel Switches 10
    Reprint Using Front Panel Switches 10
Boldface Software Commands
  ON ESC O 19,32
  OFF ESC X, ESC & 20,32
B1-B8 Bottom dipswitch description of use 5-6
BEL Bell 22,31
BS Backspace 18,31

-C-

Carriage Movement Software Commands
    Clear R&L Margins & H Tabs ESC 1 17,31
    Set Horizontal Pitch to 10ch/inch ESC P 16,31
    Set Horizontal Pitch to 12ch/inch ESC E 16,31
    Set Horizontal Pitch to 15ch/inch ESC M 16,31
    Set Horizontal Pitch Variable ESC US n1 n2 16,31
    Set Horizontal Tab Table ESC HT n1 n2 17,31
    Set Left Margin Absolute ESC 9 n1 n2 17,31
    Set Right Margin Absolute ESC 0 n1 n2 17,31
Centering, Auto ESC = (ON) 21,32
Commodore Pet Operation Description 12
Cover Open Indication 8
CR Carriage Return 18,31
C1-C8 Center Dipswitch Description of Use 3,4

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DAISYKEY
    Code Description 24,31,32
    Example 33,34
DAISYPLOT 23,31,26-28
Daisywriter Software Commands 10-23,31,32
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Diagnostic Protocol
    Description 24
    Example 35
DA0+ Parallel Input Bit 1 13,14
DA0RTN Parallel Input Bit 1 Return 13,14
DA1+ Parallel Input Bit 2 13,14
DA1RTN Parallel Input Bit 2 Return 13,14
DA2+ Parallel Input Bit 3 13,14
DA2RTN Parallel Input Bit 3 Return 13,14
DA3+ Parallel Input Bit 4 13,14
DA3RTN Parallel Input Bit 4 Return 13,14
DA4+ Parallel Input Bit 5 13,14
DA4RTN Parallel Input Bit 5 Return 13,14
DA5+ Parallel Input Bit 6 13,14
DA5RTN Parallel Input Bit 6 Return 13,14
DA6+ Parallel Input Bit 7 13,14
DA6RTN Parallel Input Bit 7 Return 13,14
DA7+ Parallel Input Bit 8 13,14
DA7RTN Parallel Input Bit 8 Return 13,14

DAV	Data Available IEEE-488 Goes T2L Low to Load Data Into Printer Buffer Goes T2L High When NDAC Goes Low	13,14
DAVRTN	Data Available IEEE-488 Return	13,14
DC1	Select Printer	22,31
DC2		31
DC3	Deselect Printer	22,31
DC4		31
DTR	Data Terminal Ready T2L Output	14
DTRRTN	Data Terminal Ready T2L Return	14

-E-

Error Indication Description 8,11
EM Print Space Character Command 23,31
ESC Escape Command 22,31
ETX End of Text 24,31
ETX/ACK Serial Communication Protocol 24

-F-

Form Feed
  Software Command FF 23,31
  Hardware Front Panel Selection Description 9
Form Length Select
  Software Command ESC FF n1 n2 16,32
  Hardware Front Panel Selection Description 7

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Graphics
  Standard
    ON Software Command ESC . 21,31
    OFF Software Command ESC / 21,31
  Vector
    DAISYPLOT graphics ON ESC ! 23,31
    Description of DAISYPLOT 26,27,28

-H-

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Horizontal Pitch Select Software 16
Horizontal Pitch Select Front Panel Description 8
HT Horizontal Tab Command 18,31

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- Signal Pinout Assignment and Description 13,14
- Rear Panel Pin Layout 14
- Mating Connector List 14
- Selection of Parallel or Serial Interface 5

IFC Interface Clear IEEE-488 13,14
IFCRTN Interface Clear IEEE-488 Return 13,14
IRC Inverted Reverse Channel Polarity Select 1

-J-

Justification, Automatic
- Software Command ON ESC H 20,32
- Software Command OFF ESC X 20,32

Justification, Limit Change
- Software Command ESC UA n1 n2 20,32

Justification Limit Change, APPENDIX G 37

-L-

Language Select Dipswitch T5-T8 1,2
Line Feed after CR
- Software Command ON ESC , 23,32
- Software Command OFF ESC * 23,32
- Hardware Dipswitch B1 ON 5

Line Spacing Select
- Software Selection 16,32
- Hardware Selection 8

LF Line Feed Command
- Software Command 18,31
- Hardware Selection 9

LPI Lines Per Inch Select (See Vertical Pitch)

-M-

Margins
- Bottom Set ESC - 17,32
- Bottom & Top Clear ESC 2 18,32
- Left & Right Clear ESC 1 17,31
- Left Set ESC 9 n1 n2 17,31
- Right Set ESC 0 n1 n2 17,31
- Top Set ESC + 17,32

-N-

NDAC	Not Data Accepted IEEE-488 (ACK+) Input	13,14
NDACRTN	Not Data Accepted IEEE-488 Return	13,14
NRFD	Not Ready for Data IEEE-488 (RDY+) Input	13,14
NRFDRTN	Not Ready for Data IEEE-488 Return	13,14
NSTB	Strobe Input AC Terminated 110 ohms Input	13,14
NSTBRTN	Strobe Input AC Terminated Return	13,14
n	ASCII Character Notation	15
n1 n2	ASCII Hex Notation	15

-P-

Paper Movement		
Software Commands		
Clear PL,BM,TM and VTabs	ESC 2	18,32
Paper Feed Forward	ESC F n1 n2	18,32
Paper Feed Reverse	ESC R n1 n2	19,32
Set Bottom Margin	ESC -	17,32
Set Form Length	ESC FF n1 n2	16,32
Set Top Margin	ESC +	17,32
Set Vertical Pitch Variable	ESC 8 n1 n2	16,32
Set Vertical Spacing 1L/LF	ESC 3	16,32
Set Vertical Spacing 1.5L/LF	ESC 4	16,32
Set Vertical Spacing 2.0L/LF	ESC 6	16,32
Set Vertical Tab Table	ESC VT n1 n2	18,32
Hardware		
LF Line Feed		9
TOF Form Feed		9
Auto Paper Feed		9
Form Length Select Thumbwheel		7
Paper out indication		8
Parity odd-even select	B3	5
Parity on-off select	B4	6
Pitch		
Software Commands		
Horizontal 10 ch/inch	ESC P	16,32
Horizontal 12 ch/inch	ESC E	16,32
Horizontal 15 ch/inch	ESC M	16,32
Horizontal Variable	ESC US n1 n2	16,32
Vertical Variable	ESC 8 n1 n2	16,32
Hardware Horizontal		8
Hardware Vertical T4	6 or 8 Lines/Inch	1
Power Indicator Description		8
Print DEL character	C2 ON	3
Print in Black	ESC B	19,32
Print in Red (Optional) ON	ESC A	19,32
Print in Red (Optional) OFF	ESC X	20,32
Protocol Selection	ESC ESC n	3,4,25

Proportional Spacing, Automatic ON		ESC Y	21,32
Proportional Spacing, Automatic OFF		ESC Q	21,32
Proportional Spacing, Table APPENDIX F			36
Proportional Spacing, Value Change		ESC SP s n	21,32
PAPR CONT	Paper Continuous Selection		1
PAPR CUT	Paper Cut Selection		1

-R-

Reset			
	Front Panel Control		7
	Hardware	IFC	13,14
	Immediate Software Command	ESC SUB S	22,32
	Remote Software Command	ESC # B	22,32
Ribbon Out Indication Description			8
RDY	Ready/Busy Output		13,14
RDYRTN	Ready/Busy Output Return		13,14
RDY-	Ready Negative Polarity Select		3
RDY+	Ready Positive Polarity Select		3
RSAA	RS232 Frame Ground		13,14
RSAB	RS232 Signal Ground		13,14
RSBA	RS232 Transmit Data	Output	13,14
RSBB	RS232 Receive Data	Input	13,14
RSCA	RS232 Request to Send	Output	13,14
RSCB	RS232 Clear to Send	Input	13,14
RSCC	RS232 Data Set Ready	Input	13,14
RSCD	RS232 Data Terminal Ready	Output	13,14
RSCF	RS232 Carrier Detect	Input	13,14

-S-

Shadow Print Command ON		ESC W	20,32
Shadow Print Command OFF		ESC &, ESC X	20,32
Sheet Feeder Set-up			1
Software Command Summary			31,32
Subscript Command ON		ESC U	19,32
Supercript Command ON		ESC D	19,32
SELECT	Select	Output	13,14
SHT FDR	Sheet Feeder T2 ON		1
SI	Software Parallel Select		23,31
SO	Software Serial Select		23,31
SP	Space		23,31
SPIN+	Special Input Commodore Pet		12,13,14
SPINRTN	Special Input Commodore Pet	Return	13,14
STB	Strobe DC terminated 110 ohm	Input	13,14
STBRTN	Strobe DC terminated 110 ohm	Return	13,14
STX	Start of Text		31
SUB			31
s	Substitute ASCII Character Definition		15

-T-

Table A Select Baud Rate Value n		25
Table B Select Protocol Value n		25
Tab Table		
Horizontal Clear	ESC 1	17,31
Horizontal Set	ESC HT n1 n2	17,31
Vertical Clear	ESC 2	18,32
Vertical Set	ESC VT n1 n2	18,32
Test, Self Initiation		10
TEST Pushbutton operation		8
TOF Description of use		9
TTY+ Current Loop Serial Input +	Ext Supplied	14
TTY- Current Loop Serial Input -	Ext Supplied	14
TTYO+ Current Loop Serial Output +		14
TTYO- Current Loop Serial Output -		14
T1-T8 Top Dipswitch Description		1,2

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Underline Software Command ON	ESC I	20,32
Underline Software Command OFF	ESC J	20,32

-V-

Vertical Pitch Select		
Software Variable	ESC 8 n1 n2	16,32
Hardware Dipswitch 6 or 8 LPI	T4	1,2
Vertical Spacing Select		
Software Select 1.0L/LF	ESC 3	16,32
Software Select 1.5L/LF	ESC 4	16,32
Software Select 2.0L/LF	ESC 6	16,32
Hardware Select		8
VT Vertical Tab		19,31

-W-

Word Processing Software Commands		
Boldface ON	ESC O	19,32
Cancel Boldface,Shadow,Underline, Justification, Print Red, Centering, Program Mode	ESC X	20,32
Centering ON	ESC =	21,32
Justification Auto ON	ESC H	20,32
Justification Limit Change	ESC UA n1 n2	20,32,37
Print in Red (Optional) ON	ESC A	19,32
Print in Black	ESC B	19,32

Proportional Auto Spacing ON	ESC Y	21,32
Proportional Auto Spacing OFF	ESC Q	21,32
Proportional Spacing Value Change	ESC SP s n	21,32
Shadow Print	ESC W	20,32
Subscript	ESC U	19,32
Superscript	ESC D	19,32
Underline ON	ESC I	20,32
Underline OFF	ESC J	20,32

-X-

X-ON/X-OFF Serial Protocol Operation 24